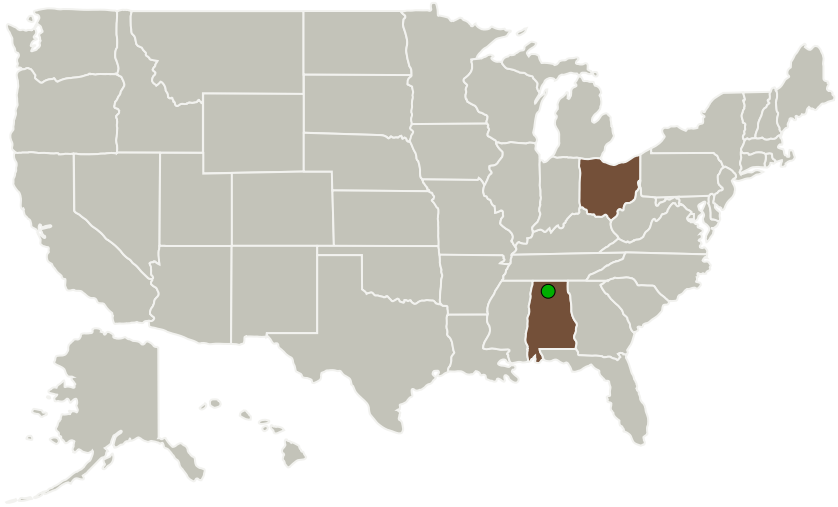
NONA Cure of Prepreg Structures, Phase II

Completed Technology Project (2015 - 2017)

Project Introduction

CRG's no-oven, no-autoclave (NONA) cure of OoA or autoclave prepreg materials allows the manufacture of large composite structures without the expensive and energy-intensive capital equipment currently required for fabrication. Qualified autoclave or OoA prepreg tapes can be applied simultaneously with dry unidirectional (UD) tapes in an automated process. The presence of dry fibers throughout the layup before infusion allows improved breathing, removal of volatiles from prepreg, and improved compaction with only atmospheric pressure, mimicking the double vacuum debulk (DVD) process without the equipment. NONA resin is then introduced at ambient temperature to wet out all available contact surfaces and cure itself and the prepreg. The NONA epoxy resin uses its own chemical energy to propel itself through a complete cure with no external heat required. The baseline NONA resin provides good strength, chemical resistance, and thermal performance up to 350F. Pairing NONA resin with a compatible prepreg a cure of both systems is achieved at room temperature. Because the cure occurs at room temperature, the NONA resin locks in its shape near room temperature, thus allowing the use of low-cost tooling materials, typically avoided because of high CTE.

Primary U.S. Work Locations and Key Partners



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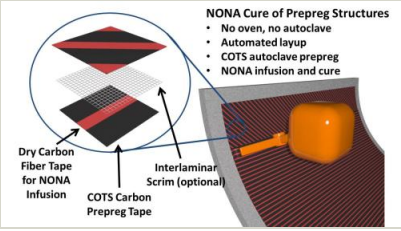
Organizations Performing Work	Role	Type	Location
Cornerstone Research Group, Inc.	Lead Organization	Industry	Miamisburg, Ohio
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Ohio

Images



Briefing Chart
NONA Cure of Prepreg Structures Briefing Chart
(https://techport.nasa.gov/image/127439)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Cornerstone Research Group, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Michael D Rauscher

Co-Investigator:
Michael Rauscher

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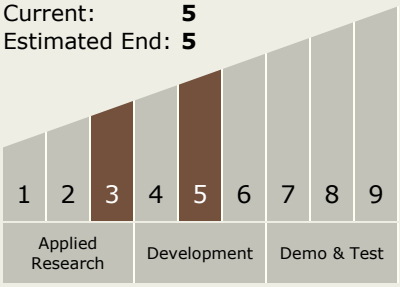
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.1 Manufacturing Processes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System